

DEPARTMENT OF JUSTICE
FORENSIC SCIENCE DIVISION

Tim Fox
Attorney General

2679 Palmer Street
Missoula, MT 59808



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POSTMORTEM EXAMINATION REPORT

NAME: Stephen Lynn Hamilton CASE #: B17-062 Complete autopsy
AGE: 38 RACE: Caucasian GENDER: Male
DATE & TIME OF POSTMORTEM EXAMINATION: Monday, March 27, 2017 at 1000
AUTOPSY ASSISTANT: Heather Beeler

PATHOLOGIC DIAGNOSES

- I. Mitragynine intoxication
 - A. Pulmonary congestion and edema
- II. History of diabetes
 - A. Insulin infusion pump
- III. Hypertensive and arteriosclerotic cardiovascular disease
 - A. Heart weight 479 grams, expected weight for body length 346 grams, +/- 40 grams
 - B. Focal 25% occlusion, proximal left anterior descending coronary artery
- IV. Incidental bilateral renal lithiasis
- V. Postmortem toxicologic examination positive findings:
 - A. Mitragynine 2500 ng/mL quantitated in blood
 - B. Diphenhydramine detected in blood and urine
 - C. Gabapentin detected in urine
 - D. See separate toxicology report

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Name: Stephen Hamilton

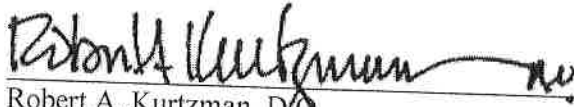
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Case number: B17-062

CAUSE OF DEATH: Mitragynine intoxication

OTHER SIGNIFICANT CONDITIONS: Hypertensive and arteriosclerotic cardiovascular disease.

MANNER OF DEATH: Accident



Date: May 12, 2017

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Robert A. Kurtzman, D.O.
MONTANA STATE MEDICAL EXAMINER

CIRCUMSTANCES OF DEATH AND OPINION

The decedent is a 38 year-old male who was discovered unresponsive on the floor next to his bed. Per report he had a history including: diabetes, drug use, alcohol use and had recent foot surgery. Postmortem examination revealed a bite mark of the tongue and slight enlargement of the heart consistent with hypertensive cardiovascular disease. Postmortem toxicologic examination revealed a high Mitragynine concentration in the blood. Mitragynine is a compound with opioid like activity that is found in Kratom leaves. The intoxication is most consistent with the unintended (accidental) consequence of Kratom use; therefore, based on the current information the manner of death is classified as accident.

POSTMORTEM EXAMINATION

At the request of Dick Brown, Fergus County Coroner, an autopsy is performed on the body of Stephen Lynn Hamilton at the Montana State Department of Justice Forensic Science Division Laboratory in Billings, Montana at St. Vincent Hospital on Monday, March 27, 2017 at 1000.

RADIOGRAPHS

- No radiographs are obtained.

CLOTHING

- The body is received clad in:
- Black sweat pants
- Gray knee brace (left)
- Red boxer briefs
- Blue t-shirt

EXTERNAL EXAMINATION

The body is that of a normally developed, slightly overweight male who appears appropriate for the reported age. The body length is 72 inches and the weight is 204 pounds (BMI 27.7). The body is well-preserved in the absence of embalming. Except in areas exposed to pressure, livor mortis is posterior and fixed. Rigor mortis is complete in the jaw and extremities. The head is normocephalic and the scalp is covered by wavy brown hair up to 1.5 inches long. The decedent has a beard and

Name: Stephen Hamilton

Case number: B17-062

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moustache. The ears are normally formed. The left earlobe is pierced twice. The eyes are blue and the corneae are clear. The sclera and conjunctivae are normal. There are no petechiae on the conjunctivae or sclerae. The periorbital regions are unremarkable. The nose is normally formed. The teeth are natural and there are no focal lesions on the oral or buccal mucosae. Blood is present in the mouth. The neck, chest and abdomen have normal contour without deformity. All four extremities are present and are normally developed. The penis is circumcised and the testicles are descended.

IDENTIFYING MARKS AND SCAR(S)

- Left knee: scar
- Left dorsal wrist: 2 scars
- Lumbar midline: scar
- Right dorsal wrist: 2 scars
- Right dorsal foot: recent healing defect

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EVIDENCE OF MEDICAL INTERVENTION

- Insulin pump right lower abdomen quadrant.

EVIDENCE OF INJURY

- Left shin: ½ inch abrasion
- Left side of neck: ½ inch abrasion

INTERNAL EXAMINATION

BODY CAVITIES

The body is opened utilizing a Y-incision. The adipose tissue is bright yellow and the cut surface is unremarkable. The underlying skeletal muscle is unremarkable. The contents of the thorax and abdomen are present in their usual location and have normal anatomic relationship. The pleura and peritoneum are smooth and there is no abnormal free fluid or free air.

CENTRAL NERVOUS SYSTEM

The scalp is reflected in the usual manner and there are no contusions. The calvarium is intact without fracture. The dura is soft and pliable and there are no focal lesions. The leptomeninges are clear and the brain is 1523 grams. There is no swelling, midline shift or herniation. The gyri and sulci are normally formed. The vessels at the base of the brain and cranial nerves are normally formed. There are no thrombi in the venous sinuses. The cut surface of the cortex, white matter, central gray matter, brain stem and cerebellum are unremarkable. The ventricular system is normally formed and is not enlarged.

NECK ORGANS

The lingual surface is normal except for a bite mark at the tip. The epiglottis is not enlarged and the laryngeal mucosa is smooth. There is no hemorrhage on the cut surface of the laryngeal mucosa and

Name: Stephen Hamilton

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there are no foreign objects in the upper airway. The thyroid cartilage, thyroid cornu and hyoid bone are intact. The strap muscles of the neck are unremarkable. The anterior cervical fascia is normal.

CARDIOVASCULAR SYSTEM

The aorta is normally developed and has normal distribution. There is no significant atherosclerosis of the aorta. The venae cavae are unremarkable. The pericardial sac lining is smooth and the pericardial fluid is not increased. The epicardium of the heart is smooth and unremarkable and the heart is 479 grams. The great vessels arise in the usual manner and the right and left atrium are normally formed. The right and left ventricles are normally formed. The right ventricle, septum and left ventricle myocardium are 0.5 cm, 1.6 cm and 1.8 cm thick respectively. There are no focal lesions on the endocardium or cut surface of the myocardium. The cardiac valves are normally formed, soft and pliable without calcifications, vegetations or fibrosis. The coronary arteries are normally formed, are right side dominant and have normal distribution. The proximal left anterior descending coronary artery has approximately 25% occlusion due to atherosclerotic plaque. There is no other significant coronary artery atherosclerosis.

RESPIRATORY SYSTEM

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The right and left lungs are 892 and 768 grams, respectively. Both lungs have normal lobulation and the pleura is smooth dark pink-red with slight anthracosis. There are no focal lesions on the pleura. The cut surface of the pulmonary parenchyma is congested and exudes serous froth. The bronchi and pulmonary vasculature are normally formed. There are no pulmonary thromboemboli. The bronchial mucosa is normal. There are no foreign objects in the upper or lower airways.

GASTROINTESTINAL SYSTEM

The esophagus traverses the posterior mediastinum in the usual manner before passing through the intact diaphragm and connecting with the stomach. The stomach contains 50 milliliters of meat, beans and tan pasty material. The mucosa is smooth and there is no ulceration. The small intestine, large intestine, mesentery and omentum are unremarkable. The appendix is normal.

HEPATOBIILIARY SYSTEM

The liver is 2563 grams and has normal lobulation. The red-brown, smooth surface is intact. The anterior right lobe surface has a single firm 1 cm diameter, well-circumscribed tan nodule. There are no focal lesions on the congested appearing cut surface. The intrahepatic and extrahepatic bile ducts are normally formed and there are no calculi in the ducts. The gallbladder is normally formed and filled with yellow-green bile. The mucosa is smooth and there are no calculi. The pancreas is firm, tan and lobular, and there are no focal lesions on the normal appearing cut surface.

LYMPHORETICULAR SYSTEM

The spleen is 255 grams. The smooth, red-blue surface is intact and there are no focal lesions on the normal appearing cut surface. There is no cervical, thoracic or abdominal lymphadenopathy and the thymus is unremarkable.

GENITOURINARY SYSTEM

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The right and left kidneys are 212 and 206 grams, respectively. The capsules strip easily and the cortices of both kidneys are red and slightly granular. The cortices are sharply delineated from the medullary pyramids. Some of the calyces and pelves are slightly blunted and there are bilateral hard calculi at some of the papilla tips up to 4 mm in greatest dimension. The ureters are not dilated and are normal. The ureters traverse the retroperitoneum in the usual manner before passing through the wall of the normally formed bladder. The bladder mucosa is smooth and tan. The bladder contains approximately 180 mL of urine. The prostate is normal.

ENDOCRINE

The right and left adrenal glands are normally formed. The golden brown cut surface is unremarkable and there are no focal lesions. The thyroid has normal lobulation and there are no focal lesions on the normal appearing cut surface. The parathyroid glands are not enlarged and the pituitary is unremarkable.

MUSCULOSKELETAL SYSTEM

The visible portions of the axial and appendicular skeleton, musculature and soft-tissue are normal.

EVIDENCE The following items are collected and preserved:

- FTA card with a sample of the decedent's blood.

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MICROSCOPIC EXAMINATION

SLIDE KEY:

- A. Spleen, pancreas, thyroid and adrenal glands
- B. Myocardium, lung, coronary artery and kidneys
- C. Liver, lung and hippocampus

CARDIOVASCULAR: The myocardium does not have any significant histopathologic abnormality.

RESPIRATORY: Pulmonary congestion and edema.

HEPTOBILIARY: The liver has prominent centrilobular congestion. Many nuclei are cleared. A nodule from the liver surface is well circumscribed, focally calcified and contains fat. The pancreas is normal.

LYMPHORETICULAR: The spleen is normal.

GENITOURINARY: The kidneys are autolyzed. There is focal calcification in the distal collecting ducts.

ENDOCRINE: The thyroid and adrenal glands are normal.

CENTRAL NERVOUS SYSTEM: The hippocampus does not have any significant histopathologic abnormality.

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Montana Department of Justice
Forensic Science Division
2679 Palmer Street, Missoula, MT 59808
Ph. 406-728-4970 Fax 406-549-1067

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CORONER RICHARD BROWN
FERGUS COUNTY CORONER
PO BOX 595
LEWISTOWN, MT 59457

Lab Case #: FSD-17-002056

SUBJECT: HAMILTON, STEPHEN

CC:
ROBERT KURTZMAN

TOXICOLOGY REPORT

EVIDENCE:

Item

001 TOX KIT - HAMILTON, STEPHEN

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ALCOHOL RESULTS:

ETHANOL - NONE DETECTED

ANALYSIS OF SUBMITTED BLOOD SAMPLE

DRUG CONFIRMATIONS:

DIPHENHYDRAMINE

DETECTED IN BLOOD AND URINE

MITRAGYNINE

DETECTED IN BLOOD AND URINE

GABAPENTIN

DETECTED IN URINE

SEE ATTACHED REPORT FROM
COMMUNITY HOSP

SEE ATTACHED REPORT FROM NMS
LABORATORY

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Date of Report: 05/01/2017

CRYSTAL EVERETT
TOXICOLOGIST

SCOTT SCHLUETER
TOXICOLOGIST

APRIL MITCHELL
TOXICOLOGIST

DOUG LANCON
FORENSIC SCIENTIST

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Continuation of Report for Lab # FSD-17-002056

PLEASE NOTE: All biological specimens or other items that were submitted to the Toxicology Section in this case will be retained at this Laboratory for a period of one year at which time they will be destroyed; unless or until we receive a letter from your office stating what other action you may require. All concentrations are expressed as the expanded uncertainty at a coverage probability of 95.45% using a coverage factor of $k=2$. Caffeine, Nicotine, Cotinine, and Lidocaine are not reported by the laboratory unless specified by the Toxicology Supervisor. The Toxicology Section will provide the measurement uncertainty for all other drugs upon request. For further inquiry, please contact the Toxicology Section at DOJTOX@mt.gov.

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COMMUNITY MEDICAL CENTER
 2827 Fort Missoula Road
 Missoula, MT 59804
 (406) 728-4100
 CLIA# 27D0666145
 Nicole M. Finke, MD, Medical Director

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Patient: HAMILTON, STEPHEN
 MRN: CMCM09623902
 FIN: CMROE540053
 DOB/Age/Sex: 3/29/1907 110 years Unknown
 Admit: 3/29/2017
 Client: Montana Division of Forensic Science - CMCM
 Provider: Larson MS D-ABFT-FT, Scott J

Stool and Miscellaneous Fluids

Order	Accession	Collected
Chloride, Fluid	17-086-4416	3/27/2017 10:00 MDT
Test	Result	Units
Fluid Type	Other	Reference Range
Chloride, Fluid	111 ^u	mEq/L
Verified		
3/29/2017 22:50 MDT		
3/29/2017 22:49 MDT		

Interpretive Data
 il: Chloride, Fluid
 No established normal range.

Order	Accession	Collected
Creatinine, Fluid	17-086-4416	3/27/2017 10:00 MDT
Test	Result	Units
Fluid Type	Other	Reference Range
Creat, Fluid	0.30 ^u	mg/dl
Verified		
3/29/2017 22:50 MDT		
3/29/2017 22:49 MDT		

Interpretive Data
 il: Creat, Fluid
 No established normal range.

Order	Accession	Collected
Glucose, Fluid	17-086-4416	3/27/2017 10:00 MDT
Test	Result	Units
Fluid Type	Other	Reference Range
Glucose, Fluid	61 ^u	mg/dL
Verified		
3/29/2017 22:50 MDT		
3/29/2017 22:49 MDT		

Interpretive Data
 il: Glucose, Fluid
 No established normal range.

Order	Accession	Collected
Potassium, Fluid	17-086-4416	3/27/2017 10:00 MDT
Test	Result	Units
Fluid Type	Other	Reference Range
Verified		
3/29/2017 22:50 MDT		

L=Low H=High C=Critical @=Abnormal *=Corrected

Report Request ID: 144364152

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Print Date/Time: 3/30/2017 06:32 MDT

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COMMUNITY MEDICAL CENTER

Patient: HAMILTON, STEPHEN
 MRN: CMCM09623902 Admit: 3/29/2017
 FIN: CMROE540053 Client: Montana Division of Forensic Science - CMCM
 DOB/Age/Sex: 3/29/1907 110 years Unknown Ordering: Larson MS D-ABFT-FT, Scott J

Stool and Miscellaneous Fluids

Order	Accession	Collected
Potassium, Fluid	17-086-4416	3/27/2017 10:00 MDT
Test	Result	Units
Potassium, Fluid	>10.0 ^u	mEq/L
		Reference Range
		Verified
		3/29/2017 22:50 MDT

Interpretive Data

i1: Potassium, Fluid
 No established normal range.

Order	Accession	Collected
Sodium, Fluid	17-086-4416	3/27/2017 10:00 MDT
Test	Result	Units
Fluid Type	Other	
Sodium, Fluid	135 ^u	mEq/L
		Reference Range
		Verified
		3/29/2017 22:50 MDT
		3/29/2017 22:49 MDT

Interpretive Data

i2: Sodium, Fluid
 No established normal ranges.

Order	Accession	Collected
Urea Nit, Fluid	17-086-4416	3/27/2017 10:00 MDT
Test	Result	Units
Fluid Type	Other	
Urea Nit, Fluid	14 ^u	mg/dL
		Reference Range
		Verified
		3/29/2017 22:50 MDT
		3/29/2017 22:49 MDT

Interpretive Data

i1: Urea Nit, Fluid
 No established normal range.

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L=Low H=High C=Critical @=Abnormal *=Corrected

Report Request ID: 144364152

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Print Date/Time: 3/30/2017 06:32 MDT

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3701 Welsh Road, PO Box 433A, Willow Grove, PA 19090-0437
 Phone: (215) 657-4900 Fax: (215) 657-2972
 e-mail: nms@nmslabs.com
 Robert A. Middleberg, PhD, F-ABFT, DABCC-TC, Laboratory Director

Toxicology Report

Report Issued 04/25/2017 21:00

To: 20143
 Montana State Crime Lab
 2679 Palmer Street
 Missoula, MT 59808

Patient Name HAMILTON, STEPHEN
 Patient ID FSD-17-002056
 Chain 17106857
 Age Not Given DOB Not Given
 Gender Not Given
 Workorder 17106857

Page 1 of 2

CONFIDENTIAL**Positive Findings:**

<u>Compound</u>	<u>Result</u>	<u>Units</u>	<u>Matrix Source</u>
Mitragynine	2500	ng/mL	001 - Blood

See Detailed Findings section for additional information

Testing Requested:

<u>Analysis Code</u>	<u>Description</u>
3064B	Mitragynine, Blood

Specimens Received:

<u>ID</u>	<u>Tube/Container</u>	<u>Volume/ Mass</u>	<u>Collection Date/Time</u>	<u>Matrix Source</u>	<u>Miscellaneous Information</u>
001	Green Vial	2 mL	Not Given	Blood	

All sample volumes/weights are approximations.

Specimens received on 04/06/2017.

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Workorder 17106857
 Chain 17106857
 Patient ID FSD-17-002056

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Detailed Findings:

Analysis and Comments	Result	Units	Rpt. Limit	Specimen Source	Analysis By
Mitragynine	2500	ng/mL	100	001 - Blood	LC-MS/MS

Other than the above findings, examination of the specimen(s) submitted did not reveal any positive findings of toxicological significance by procedures outlined in the accompanying Analysis Summary.

Reference Comments:

1. Mitragynine (Kratom) - Blood:

Mitragynine is an alkaloid found in the plant Kratom which originates from Asia. The leaves of the plant are consumed for their stimulant and analgesic effects and these effects are attributed to mitragynine. Plant extracts are sold for their medicinal use and may be subject to abuse. Adverse effects include seizures, coma, and death. Mitragynine blood concentrations listed in fatalities ranged from 20-600 ng/mL; other substances may have also been present.

Chain of custody documentation has been maintained for the analyses performed by NMS Labs.

Unless alternate arrangements are made by you, the remainder of the submitted specimens will be discarded six (6) weeks from the date of this report; and generated data will be discarded five (5) years from the date the analyses were performed.

CONFIDENTIAL**Analysis Summary and Reporting Limits:**

All of the following tests were performed for this case. For each test, the compounds listed were included in the scope. The Reporting Limit listed for each compound represents the lowest concentration of the compound that will be reported as being positive. If the compound is listed as None Detected, it is not present above the Reporting Limit. Please refer to the Positive Findings section of the report for those compounds that were identified as being present.

Acode 3064B - Mitragynine, Blood

-Analysis by High Performance Liquid Chromatography/
 Tandem Mass Spectrometry (LC-MS/MS) for:

Compound	Rpt. Limit	Compound	Rpt. Limit
Mitragynine	100 ng/mL		

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